Brian Weaver

CONTACT INFORMATION

Statistical Sciences, CCS-6
Los Alamos National Laboratory
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RESEARCH INTERESTS

Applying statistical methods to the engineering and physical sciences, Bayesian and maximum likelihood methods, reliability, astrostatistics, optimal experimental design (both classical and Bayesian), Monte Carlo methods, measurement error, (physical) model validation, and parallel computing.

EDUCATION

Ph.D. in Statistics

Iowa State University, Ames, IA, May 2011

- Thesis title: Methods for planning repeated measures degradation tests
- Adviser: William Q. Meeker

M.S. in Statistics

Iowa State University, Ames, IA, December 2009

- Adviser: William Q. Meeker

B.S. in Applied Mathematics

University of New Mexico, Albuquerque, NM, May 2006

- Magna cum laude, Kappa Mu Epsilon
- Minor in Earth and Planetary Sciences

EMPLOYMENT HISTORY

Los Alamos National Laboratory, Los Alamos, NM

Scientist, 2011-Present

- Statistical Sciences, CCS-6

GRA, 2010 - 2011

- Nuclear Material Control and Accountability, SAFE-4

GRA, 2006 - 2010

- Statistical Sciences Group, D-1, CCS-6

Iowa State University, Ames, IA

Research Assistant, 2006-2010

- Department of Statistics

Awards

Professional Awards

- Lloyd S. Nelson Award, American Society for Quality Statistics Division, 2014
- Los Alamos Achievement Award, Los Alamos National Laboratory, 2013

Graduate Student Awards

- Jebe Fellowship, Iowa State University, 2006
- GlaxoSmithKline Student Scholar Award, 2006

Teaching Experience

Des Moines Area Community College, Ankeny, IA USA

Adjunct Instructor **August 2009 to May 2010**

- Instructor for Prealgebra, Fall 2009
- Instructor for Introduction to Statistics, Spring 2010

Books Authored

Andreon, S., and **Weaver, B. P.** (2015) *Bayesian Methods for the Physical Sciences: Learning from Examples in Astronomy and Physics.* Springer.

Publications

Publications in Statistical Journals

13. **Weaver, B.P.**, Williams, B., Anderson-Cook, C., and Higdon, D. "Computational Enhancements to Bayesian Design of Experiments Using Gaussian Processes." *Bayesian Analysis*, doi:10.1214/15-BA945 (2016).

12. **Weaver, B.P.**, Warr, R. L., Anderson-Cook, C., and Higdon, D. "Visualizing Discrepancies from Nonlinear Models and Computer Experiments." *Statistical Analysis and Data Mining*, 8, 274-286 (2015).

11. **Weaver, B. P.** and Meeker, W. Q. "Methods for Planning Accelerated Repeated Measures Degradation Studies (with discussion)." *Applied Stochastic Models in Business and Industry*, 30, 658-671 (2014).

10. Hamada, M.S., Wilson, A.G., **Weaver, B.P.**, Griffiths, R.W., Martz, H.F. "Bayesian Binomial Assurance Tests for System Reliability Using Component Data." *Journal of Quality Technology*, 46, 24-32 (2014).

9. Vander Wiel, S., **Weaver, B.P.**, Stepan, T. "Discussion of 'More Pitfalls of Accelerated Tests' by Meeker, Sarakakis, and Gerokostopoulos." *Journal of Quality Technology*, 45, 238-239 (2013).

8. Collins, D.H., Freels, J. K., Huzurbazar, A.V., Warr, R.L., **Weaver, B. P.** "Accelerated Test Methods for Reliability Prediction." *Journal of Quality Technology*, 45, 244-259 (2013). **Selected for the 2014 Lloyd S. Nelson Award**.

7. **Weaver, B. P.**, Meeker, W. Q., Escobar, L. A., Wendelberger, J. "Methods for Planning Repeated Measures Degradation Studies." *Technometrics*, 55, 122-134 (2013).

6. Burr, T., Hamada, M.S., Skurikhin, M., and **Weaver, B. P.** "Pattern Recognition Options to Combine Process Monitoring and Material Accounting Data in Nuclear Safeguard." *Statistics Research Letters*, 1, 6-31 (2012).

5. **Weaver, B. P.**, Hamada, M. S., Wilson, A. G., Vardeman, S. B. "A Bayesian Approach to the Analysis of Gauge R & R Data." *Quality Engineering*, 24, 486-500 (2012).

4. Burr, T., and **Weaver, B.P.** "Bayesian Options for Computer Model Calibration with Examples in Astronomy." *Far East Journal of Theoretical Statistics*, 40, 1-30 (2012).

3. Burr, T., Croft, S., Hamada, M.S., Vardeman, S., **Weaver, B.** "Rounding Error Effects in the Presence of Underlying Measurement Error". *Accreditation and Quality Assurance*, (2012).

2. Burr, T., Hamada, M. S., Cremers, T., Howell, J., Croft, S., **Weaver, B. P.**, Vardeman, S. "Measurement Error Models and Variance Estimation in the Presence of Rounding Error Effects." *Accreditation and Quality Assurance*, 16, 347-359 (2011).

1. **Weaver, B. P.**, and Hamada, M. S., "A Bayesian Approach to the Analysis of Industrial Experiments: an Illustration with Binomial Count Data." *Quality Engineering*, 20, 269-280 (2008).

Publications in Subject Matter Journals

3. Osthus, D., Caragea, P., Higdon, D., Morley, S., Reeves, G., and **Weaver, B.P.** "Dynamic Linear Models for Forecasting of Radiation Belt Electrions and Limitations on Physical Interpretation of Predictive Models." *Space Weather*, 12, 426-445 (2014).

2. Burr. T., Hamada, M. S., Howell, J., Skuikhin, M., Ticknor, L., and **Weaver, B.P.** "Estimating Alarm Thresholds for Process Monitoring Data Under Different Assumptions About the Data Generating Mechanism." *Science and Technology of Nuclear Installations*, (2013).

1. Burr, T., Budlong-Sylvester, K., Hamada, M.S., Longo, C., **Weaver, B.P.** "Strengthened Nuclear Safeguards: A Statistical View in the Context of Combining Process Monitoring and Nuclear Material Accounting Data." *Journal of Nuclear Materials Management*, 40, 115-130 (2012).

BOOK REVIEWS **Weaver, B. P.** "Programming Graphical User Interfaces in R." *The American Statistician*,67, 110-111 (2013).

Publications in Preparation

Osthus, D., Caragea, P., Higdon, D., Morley, S., Reeves, G., and **Weaver, B.P.** "Multistate Dynamic Linear Models." Submitted to *The Annals of Applied Statistics*.

Weaver, B.P., Hamada, M.S., Wilson, A.G., and Bakerman. J.E. "Bayesian Assurance Tests Using Degradation Data."

Weaver, B. P. and Vander Wiel, S. "Accelerated Events with Multiple Thresholds."

Technical Reports

Weaver, B. P. "Solving for Beta, Gamma, and Weibull Parameters Given Two Quantiles: A Program In R." Los Alamos National Laboratory: July 15, 2006 (LA-UR-07-5529).

Invited Presentations

"Bayesian Binomial Assurance Tests for System Reliability using Component Data." **Journal of Quality Technology Invited Session**. *Informs.* San Francisco, CA. November 2014.

"Pitfalls of Accelerated Testing." Invited round table presenter. *Joint Statistical Meetings.* Boston, MA. August 2014.

"Characterizing and Adjusting for Unknown Biases from Measurements." *Joint Research Conference.* Seattle, WA. June 2014.

"Bayesian Design of Experiments Using Gaussian Processes." *Spring Research Conference.* Los Angelas, CA. June 2013.

"Bayesian Design of Experiments Using Gaussian Processes." *Quality and Productivity Research Conference.* Niskayuna, NY. June 2013.

"Big Data Challenges at Los Alamos National Laboratory." Panelist for the topic contributed panel "Big Data: Research and Training Challenges." *Joint Statistical Meetings.* San Diego, CA. July 2012.

"Assessing Properties of a Predictive Distribution Subject to Measurement Error." *Quality and Productivity Research Conference.* Long Beach, CA. June 2012.

"Estimating Single-Insult Failure Probabilities from Multiple-Insult Accelerated Tests." *Fall Technical Conference.* Kansas City, MO. October 2011.

"An Algorithm for Computing Approximate Variances and Covariances of Model Parameters from a Repeated Measures Degradation Model with Applications." *Quality and Productivity Research Conference.* Madison, WI. June 2008.

"Statistics Projects at Hy-Vee." *Iowa Chapter of the American Statistical Association.* Des Moines, IA. April 2008.

Conference Proceedings

"A Bayesian Approach to the Analysis of Gauge R & R Data." *Institute of Nuclear Material Management Annual Meetings.* Palm Desert, CA. July 2011.

"Applying Bayesian Statistical Methods to Applications in Safeguards." *Institue of Nuclear Material Management Annual Meetings.* Palm Desert, CA. July 2011.

Developed Software

"Separation-Experiment Calibrator, Version 1," LA-CC-14-015.

Professional Services

Offices Held

- Co-editor for the quality quandaries column in the ASQ journal Quality Engineering. 2015-present.
- President of the Albuquerque Chapter of the American Statistical Association, 2013-2014. *Organized a short course on designing computer experiments which was presented by Thomas Santner and Brian Williams. Created the first award presented to the best poster by a New Mexico presenter at the 2014 Conference on Data Analysis (CoDA).*

Journals Refereed

- Annals of Applied Statistics
- The American Statistician
- Technometrics
- Journal of Statistics Education
- Lifetime Data Analysis
- Journal of Geophysical Research: Planets
- Radiation Measurements

Professional Membership

- American Statistical Association
- Institute of Mathematical Statistics
- International Astrostatistics Association

Computer Expertise

Statistical Software: R, JMP, SAS, Matlab
Programming Languages: C, C++, Visual Basic
Applications: TEX, LATEX, BIBTEX, Microsoft Office
Operating Systems: Microsoft Windows, Apple OS X, some Linux